ON

APHASIA,

OR

LOSS OF SPEECH IN CEREBRAL DISEASE.

BY

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PART III.

Having in the preceding pages endeavoured critically to review the question of the localisation of the faculty of speech, as illustrated by the labours of the French, Dutch, and German pathologists, as well as by those of the different branches of the Anglo-Saxon race, I now proceed to place on record a certain number of cases which have been observed by myself, and in several of which the clinical history was completed by a careful *post-mortem* examination.

In some instances it may be thought that I have described the clinical history with too much minuteness, and with a fastidious attention to apparently unimportant details; but the question we are now considering is involved in so much obscurity, that it seems to me that it is only by carefully studying the various phases of cases which we have an opportunity of closely watching, that we can hope to contribute anything towards the solution of one of the most complex questions in cerebral pathology—a question about which so much has lately been written, and about which it seems to me so little is at present really known.

It will be observed that in several of the following cases I have given the volumetric analysis of the principal solid ingredients of the urine. This, to some persons, may seem a work of supererogation; to those I would say that the diagnosis of cerebral disease is involved in so much obscurity, that the serious and conscientious observer is bound to avail himself of every collateral aid within his reach; and it cannot be otherwise than useful, systematically to calculate the amount of phosphorus and other constant or occasional solid ingredients of nervous tissue which are daily eliminated from the system.

The following cases present various forms of the affection, from the uncomplicated pure form of aphasia—where there is simply abolition or suspension of speech without any paralytic or other morbid symptom—to the partial or even occasional impairment of that faculty; and here I would remark that in making investigations with the view of elucidating any obscure symptom or disease, the common error into which many observers fall, is to confine their attention to the consideration of typical cases only—cases where the symptom or disease is well marked and defined; whereas, as much or more information may sometimes be gained from the careful study of exceptional cases, and of cases where the particular symptom or disease is only slightly marked.

Impressed with these views, I have for some time past made careful notes of all cases that have fallen under my observation, where the faculty of articulate language was affected in any way or degree, however slight, deeming it quite as useful to study cases where the lesion of speech is a mere epiphenomenon, as where it forms the principal or the sole morbid symptom.

Aphasia of the ataxic form occurring as the earliest morbid symptom: some months later verbal amnesia: epileptiform convulsions: ultimately general paralysis.

William Sainty, a waterman, aged fifty-one, was admitted under my care into the Norfolk and Norwich Hospital, April 1st, 1865, with the following antecedent history:—He had always lived a temperate and steady life, had never contracted syphilis, nor suffered from any rheumatic affection—in fact, he had always enjoyed excellent health quite up to the period

of the present attack, which was not preceded by any premonitory symptoms of brain or nervous disorder. On the 9th of December, 1864, after unloading his vessel, in which he had conveyed a cargo of goods from Norwich to Yarmouth, a distance of thirty miles, he went into a tavern with the intention of asking for some beer, when, to his astonishment and concern, he found he could not speak—the power of articulation was suddenly and completely suspended. Nothing odd or peculiar had been observed in his manner, and he had only a few hours previously called at a merchant's office and arranged about a fresh cargo, when his aptitude for business was in no wise impaired. The loss of speech then was sudden, and was clearly unaccompanied by any other paralytic symptom, for although speechless, he, on the same evening, removed his vessel from one point of the river to another, and on the following day loaded it with a fresh cargo, after which, unaccompanied by any of his friends or comrades, he took the train to Norwich, and on his arrival walked from the railway station to his own home, a distance of a mile. His friends, alarmed at finding that his vocabulary was limited to the words "Oh! dear! oh! dear!" sent for a surgeon, under whose care he continued till a few days before he came to the hospital. I have not been able to procure any very accurate information as to the precise time during which the abolition of speech was complete; it would seem, however, that after three days he could say a few words, but that it was not till the expiration of a fortnight that there was any marked improvement; after this period the progress towards the partial recovery of his speech seems to have been gradual. Sometime in February he experienced a slight abnormal nervous symptom, characterised by numbness in one of the fingers of the right hand. A month later he had a kind of fit, falling down, and remaining for a few minutes unconscious.

Symptoms on admission.—His condition is that of a healthy looking man, with a remarkably intelligent countenance, looking me straight in the face when addressed, and evidently understanding all that is said; but although his ideas seem to arise in great number in his brain, and there is no want of sequence in his thoughts, he is unable to give expression to those ideas by articulate language, except in a very imperfect manner. There is, also, partial agraphia, for although just able to form one or two words, he cannot write a sentence, he being able to write fluently and well before the present attack. He has the proper use of all his limbs, which are free from the slightest abnormal sensation. Deglutition is unaffected. The tongue is protruded straight, and he can execute all the different movements appertaining to that organ. The only feature to notice in the tongue is, that the right half is slightly raised above the level of the left half, and is more flabby, and also that when told to protrude the tongue, he keeps it out a long time, as if from a defect of memory, probably not remembering what he had done. There is no abnormal sensation about the head, and the organs of special sense are unimpaired. He is very

cheerful, and does not weep from emotional causes, like persons with ordinary paralysis; nor has he that distressed countenance usually observed in the subjects of grave cerebral disorder. The heart's action is feeble, with occasional intermittence, but no evidence of valvular disease. Pulse, 72. Urine, sp. gr. 1020, freely acid; no albumen, and a volumetrie analysis of the principal solid ingredients gave the following result:—

Chlorides - - - -	10.5	parts per 1000
Urea - - - - -	26	„ „
Phosphoric acid (in combination)	1.5	„ „

So long a time having elapsed since the attack which had produced the impairment of speech, I felt that but little could be done in the way of treatment. I prescribed for him small doses of the phosphates of iron and zinc, with dilute phosphoric acid, and under this treatment, together with a careful attention to diet, he slightly improved, the improvement being, however, more marked in his power of writing than in speaking. Discharged June 3rd.

Shortly after his discharge he resumed his work as a waterman, when no untoward symptom occurred till January, 1866, when, after a morning's work, as he was going into his cabin to prepare for dinner, he fell to the ground quite unconscious, and came to himself in about a quarter of an hour; but his speech for some hours was more embarrassed than usual; there was, however, no paralysis on recovery, for he resumed his work the same day. At the end of February (a month later) he again fell in his cabin, frothed at the mouth, was livid in the face, and remained unconscious half an hour; on recovery, there was increased embarrassment of speech for some hours, but before night he was as usual. There seems to have been no convulsive movements on either of these two occasions. After the above date he had a similar fit every few weeks.

Re-admitted January 12th, 1867.—He seems still in possession of all his intelligence, has no paralysis, nor even diminution of motor power. He understands all that is said, but is affected with an incapacity to employ substantives, having lost the memory of words as far as that part of speech is concerned, and he will make use of a periphrase to avoid using the substantive required. If asked to fetch an object he will bring the right, but if he wants anybody else to fetch or give him anything, he more commonly asks for the wrong thing first, afterwards correcting himself, showing that he understands perfectly what he wants. If shown anything he will say that he knows what it is, but cannot say it. On being shown a purse, and being asked what it was, he answered, "I can't say the word; I know what it is; it is to put money in." Is it a knife? No. An umbrella? No. A purse? Yes. I showed him a poker. What is it? I know, but cannot say the word. What is its use? To make up the fire. Is it

a walking stick? No. Is it a broom? No. Is it a poker? Yes, he said, instantly, with a smile evincing complete understanding of the question, and joy at the certainty that he had answered it right.

March 30th.—The house surgeon was called to him to-day, and found him stretched on the floor, twitching convulsively, with turgid face, gnashing of the teeth, foaming at the mouth, eyes open and rolling, pupils dilated and insensible to light, breathing stertorous, skin cold and clammy. These symptoms continued for fifteen minutes, when violent jerking of the left leg and thigh occurred, the convulsive efforts ceased, and he gradually recovered his senses; there was no paralysis.

March 31st.—The patient had a sound sleep after the fit of yesterday, and to-day is as usual.

On showing him a tumbler glass he shakes his head, and says it is for beer, but cannot remember its name; he knows it is not called a basin, a mug, or a jug, and recognises the word glass directly it is named; but the next minute he has forgotten it, and cannot repeat it. He was also shown a warming pan, about which he became quite angry from his inability to remember its name; he, however, showed his interrogators what it was used for, with great despatch, and recognised its name the moment it was casually mentioned.

April 24th.—Suddenly taken speechless, with loss of motor power in the lower limbs, the upper extremities being unaffected. The fit was evidently entirely different from any other he has had; there were no epileptiform convulsions, simply faintness, speechlessness, and paraplegia. The pupils were equal and active; he appeared conscious of all that was going on around him, and as soon as he was put to bed he uttered confused sounds, but could not articulate.

25th.—The motor power in the lower limbs has partially returned; in fact, there is no actual paralysis this morning, there is simply want of co-ordinating power of the lower limbs; he can walk very imperfectly, supported by two persons, but cannot stand alone.

May 2nd.—I was summoned to him to-day, and found him in an epileptic fit, perfectly unconscious, pupils both contracted and immoveable, foaming at the mouth, with convulsions, which were confined to the right arm and leg and right side of the face; the right orbicularis palpebrarum was contracting violently; the left side of the body seemed unaffected; the convulsions soon affected both sides, the left, however, to a much less extent. Five grains of calomel to be put upon the tongue, and a turpentine injection to be administered.

3rd.—He is still quite unconscious—in fact, in a state of epileptic coma; pupils still contracted, and immoveable, and there is imperfect right hemiplegia, without loss of sensation.

4th.—The hemiplegia has passed off, there being only a little less power in the arm; consciousness is returning.

5th.—Pupils still contracted and insensible to light; he has recovered consciousness, and has evidently now the use of all his limbs.

He cannot stand alone, but he walked some yards this morning, with the assistance of two persons. He put his hand to his forehead as if in pain, and he is becoming restless, and requires a person constantly by his side to keep him in his bed.

In a few days he had gradually recovered the power to stand and even walk alone a few steps; he continued, however, quite unable to speak, although he would make certain sounds intended to convey his thoughts. It was soon found that his moral passions had undergone a change, and that from a particularly quiet, modest, and well-behaved inoffensive man, he had become indecent, exposing his person, revengeful, and spiteful. His mind soon gave way, he became imbecile and quite unmanageable, and it was soon found necessary to remove him to the Borough Asylum.

1868, *July 9th.*—I visited him to-day at the Asylum, and found him seated on a bench. He evidently recognised me, but was quite unable to speak a single word, and he evinced the greatest distress at his inability to converse with me. He had gained flesh, and looked well. Mr. Sutton, the resident medical officer, reported to me that about four months ago he had a series of epileptiform convulsions lasting forty-eight hours, and that he was, to all appearance, dying; he, however, soon recovered from this condition, but continued very helpless and unable to walk or even stand without assistance, although when supported by two persons he could walk a considerable distance. Mr. Sutton further reported that although unable to articulate, he gesticulates frightfully, and thus endeavours by the language of signs to supply the loss of articulate language. In further illustration of his psychological condition, I would add that his sister informs me that some months since, upon the occasion of his nephew playing the cornet in his presence, he, supported by two women, danced to the tune.

The above case seems to me to be pregnant with material for careful thought and study, and if I have dwelt thus minutely on its daily progress, it is because I apprehend that it is not common to have the opportunity of watching for so long a time a patient presenting such an exceptional chain of symptoms. I shall now proceed to analyse the various phases which the clinical history of this man has from time to time presented.

The sequence of morbid action here is curious. The very first morbid symptom was total loss of speech; after partial recovery of the faculty of speech, verbal amnesia was observed —loss of the memory of words limited to substantives—then epileptiform convulsions, and, alternating with each other,

hemiplegia and paraplegia; and eventually this curious chain of symptoms merged into a state of general paralysis.

The loss of speech was, in the first instance, of the ataxic form, for no amount of prompting would help him. As the abolition of speech was complete, it is, however, impossible to say whether or not there was at this time verbal amnesia also. Probably there was, for when the ataxic symptoms gave way, loss of the memory of words was soon observed. Dr. William Ogle* mentions two cases in which, after recovery from the ataxic form of aphasia, amnemonia remained, which he thinks must have co-existed at the earlier stage with the ataxia; in both Dr. Ogle's cases, however, there was hemiplegia, indicating a much more extensive lesion of brain than could have been suspected at this stage of Sainty's history.

The next feature to which I wish to call attention is, that not only was the total loss of speech the earliest symptom, but it was for some days the sole symptom. There was no paralysis—there was simply privation of the power of speech; it was simple aphasia, in the rigorous sense of the term—and cases such as this would seem to show that the faculty of speech may perish, or be suspended, *alone*, and that this faculty is special and independent.

The muscular apparatus, the instrument which served for the articulation of words, was in a perfect state of integrity; but an indispensable element was wanting. When the aphasia had assumed the amnesic form, the defect was dependent on loss of the memory of words; but in the earlier stage, when the ataxic form was present, was the defect due to the loss of the memory of the movements necessary for speech?

The complete but temporary loss of speech in the early stage, I presume was the result of a simple ephemeral cerebral congestion, probably situated in the same part of the brain as that, which, being subsequently more seriously injured, gave rise to the more permanent symptoms.

I think we may assume that the disease was limited to the convolutional grey matter, as there never was any persistent paralytic symptom indicative of lesion of the central ganglia.

* On Aphasia and Agraphia. St. George's Hosp. Reports, Vol. ii., 1867. This interesting and highly instructive communication contains the careful analysis of 25 cases, which have furnished Dr. Ogle with the material for one of the most useful papers that have been published on this subject.

The occurrence of paraplegic symptoms after one fit, and of hemiplegic symptoms after another, is worthy of notice. I will not attempt to offer any theoretical speculation as to the cause of the temporary loss of motor power in the lower limbs. I simply notice it as singular and exceptional; the transitory hemiplegia, I presume, can be explained on the supposition of temporary obstruction, or rather spasm of the middle cerebral artery, and the term *hemispasm*, as suggested by Dr. Hughlings Jackson, would be more appropriate to such a condition than *hemiplegia*.

I wish to call particular attention to the fact that the lesion which could produce total abolition of speech for a considerable time, did not in the least impair the intellect, for when he came under my care some months afterwards, he seemed possessed of more intelligence than most men of his class. I may here remark that the opinion of those who have written upon this subject is divided, as to whether the intelligence is, as a rule, affected in aphasia. Trosseau held the opinion that the mental faculties were always more or less impaired; on the other hand, the case of Professor Lordat has been cited as a proof that the aphasic condition may exist with the highest amount of intellectual activity. It seems that the illustrious Montpelier professor was at a certain period of his life affected with aphasia, and he has himself stated that, although speechless, he experienced no restraint or difficulty in the exercise of thought and imagination. He prepared his lessons, he arranged his subject, and was able mentally to dwell on the salient points. "*Je possédais complétement, dit-il, la partie interne du langage, je n'en avais perdu que la partie externe.*"

The question has arisen in my own mind, as to whether, during the early part of Sainty's illness, he was capable of making a will? The solution of this medico-legal question of the testamentary capacity of aphasics I will leave to the alienist physician.

Amnesic Aphasia, with right Hemiplegia; Softening of posterior part of left hemisphere; Anterior lobes healthy.

On the 20th of March, 1867, I was requested to see Mr. N——, a merchant, æt. 51, who, for a period of three or four months, had

experienced abnormal symptoms, indicating want of brain power. For some time previous to this date his friends noticed that he had become unusually quiet, less communicative, and dull. Shortly before Christmas, he had a sort of fainting fit, and soon afterwards he began to get confused in his conversation; he would let objects drop from his right hand, and do awkward things at the table—on one occasion he poured vinegar on his repast instead of pepper. It was soon observed that he could not write a letter. From inquiries which I instituted in reference to his habits, it seems that he had led a fairly temperate and steady life, and that the only cause which could be assigned was the excitement and mental tension resulting from an entire change of occupation; he having a few years previously exchanged the comparatively mechanical and automatic life of a country village, for a business of a speculating character in a large town, necessitating railway journeys to London twice a week.

During my somewhat lengthened interview with him, he never initiated any subject of conversation. When I questioned him, he seemed to get confused, and was conscious of this confusion, saying he could not find words to describe his symptoms. What answers he made, however, were given quite coherently, but in the fewest possible words. He seemed to understand everything that was said, but he had, to a certain extent, lost the memory of words, and would call things by their wrong names—for instance, being in a room where the fire was burning particularly brightly, he said, "How bright the poker looks." The person to whom he was speaking said, "You mean the fire." "Yes," he said, "I mean the fire." He would be thus confused in the choice of words to express his thoughts, and the knowledge of this defect was a source of distress to him. The idea was conceived, but the means of communication with the external world did not exist. He complained of numbness in the right arm and leg, and the tactile power of the right hand was impaired. The heart's impulse was feeble, with no abnormal sound; the pupils were sluggish, and he complained of frequent dizziness and of frontal headache. His pale and pasty aspect, diminished secretion of urine, and other symptoms caused me to deem it necessary to look carefully into the condition of the kidneys. The analysis of the urine gave the following results:—quantity passed in 24 hours, 26 ounces, sp. gr. 1030, no albumen, some pale lithates. A microscopic examination revealed the presence of amorphous lithates, a few oxalates, and several oil globules and fat cells.

Chlorides - - - -	4	parts per 1000
Urea - - - -	16	,, ,,
Phosphoric acid, in combination -	3·2	,, ,.

The condition of this patient was not materially altered for some weeks, when, after dressing himself one morning, he was profusely

sick, and his symptoms suddenly culminated into an apoplectiform seizure, with right hemiplegia and total loss of speech, the latter symptom being the result of a state of coma, from which he never rallied.

Autopsy.—There was considerable congestion of the veins on the convex surface of the brain, but there was no opacity of membranes or other morbid appearance, either on the upper surface or at the base. The vessels composing the circle of Willis, and the arteries generally, were quite healthy, both cerebral arteries being specially examined and traced along the fissure of Sylvius, without any abnormal appearance being detected. At the point of union of the middle third with the posterior third of the convex surface of the left hemisphere, was a dilatation, or bulging out of the arachnoid, giving the appearance of a cyst. This contained at least two drachms of serum, the evacuation of which disclosed a tolerably well circumscribed portion of softened cerebral tissue, of about the size and shape of an apricot, with its upper segment depressed, so as to form a cup-shaped cavity. It was here the serum was lodged, and there was at this spot an actual destruction of cerebral matter; the softened tissue was of a yellowish grey colour, resembling a strong solution of gelatine in appearance. In the centre of this softened portion was a very small clot, or rather layer, of black blood, of about the size of an ordinary wafer. From the small size of the clot, and the great extent of the softening, it must be inferred that the softening preceded, and was the cause of the clot, and the recent date of the sanguineous effusion would also favour this view. The frontal convolutions were examined with great care, especially the third, and the substance between it and the corpus striatum, but these structures were found quite healthy. The disease was, in fact, limited to the posterior third of the left hemisphere.

The heart was covered with an unusual layer of external fat; its muscular substance was pale and flabby, and its walls attenuated. The kidneys were healthy, but congested, and somewhat below the normal size. The spleen was very soft and friable.

Doubtless it will be said by some that this is scarcely a case of aphasia. It is certainly by no means a typical instance of the affection, like the preceding case; but as I am treating of lesion as well as loss of speech, I think it deserves recording as an instance of the loss of the memory of words and impairment of the faculty of language, dependent upon softening of the posterior part of the left hemisphere, with perfect integrity of the frontal convolutions and of the anterior lobe generally. In the former part of this essay, I have already cited a case of Abercrombie, somewhat resembling

this, and where the softening was also found in the *posterior* part of the left hemisphere.

Right and subsequently Left Hemiplegia, with Lesion of Speech. Frontal convolutions sound.

John Sutherland, a shoemaker, aged 60, was admitted into the Norfolk and Norwich Hospital, December 22nd, 1866, with the following history. He had not been a drinking man, had smoked very little, had suffered from gonorrhœa, but had never had syphilis or rheumatic fever. Whilst at work on September 4th, he suddenly lost the entire use of his right side, and also of his speech. The loss of articulate language was almost complete for about a fortnight, at the expiration of which time he could just make himself understood by those who knew him well; the partial recovery of his speech coincided with a little returning motor power in the leg, but it was not till two months later that there was any improvement in the hand.

Condition on admission.—There is still considerable loss of power in the right arm, and the fore arm is contracted on the arm; he walks with difficulty, but there is less impairment in the use of the leg than the arm.

The memory and intellect are unaffected; he answers questions remarkably readily, and there is now no hesitation in his speech, but he speaks in a muffled, unnatural tone, as if the mouth was full. There is no evidence of cardiac disease, no unilateral sweating; he fancies he cannot smell as well as before the attack.

There was nothing in the treatment of this case to record, except that some weeks after his admission, galvanism was twice applied to the right leg, but this seemed to aggravate his condition, for in a few days there was complete paralysis of this limb.

Some days later he had a severe apoplectic seizure, resulting in paralysis of the entire *left* side, with great difficulty of speech, and he died in a few days.

A most careful *post mortem* examination was made, which I will not describe in detail; suffice it to say that the loss of motor power on the two sides was explained by a clot in the central part of each hemisphere; there was no obstruction of the middle cerebral arteries, and we clearly satisfied ourselves that the frontal convolutions were in no wise affected.

Independently of the integrity of the frontal convolutions, there are one or two other points in this case calling for a passing remark. It will be observed that galvanism caused a

decided aggravation in his symptoms. This powerful remedial agent cannot be used with too great caution and discrimination in cases of paralysis, and I take blame to myself for having allowed its use here; for the contracted state of the forearm was indicative of a state of irritation and of exalted polarity of the nervous tissues, likely to be aggravated by electrical stimulus. Although the increase of the dextral paralysis was unaccompanied by any fresh aphasic symptoms, it will be observed that the occurrence of left hemiplegia coincided with great difficulty of speech. Those who view cases partially and distort them to suit their own notions, would, in a statistical table, put this down as a case of left hemiplegia with aphasia; whereas it is evident that the difficulty in speaking which occurred during the last few days of his life, was due to a semi-comatose condition, induced by sudden cerebral hæmorrhage, and which rapidly ended in death. I have recorded his fancied loss of smell, because I think it important in all cases to notice the state of the olfactory function.

Aphasia, with right hemiplegia; no lesion of anterior lobes.

The subject of this case, Mr. C. G——, was a gentleman, aged 36, who had led a very gay life, and who had on several occasions been affected with a severe form of venereal disease; he had also suffered from rheumatic fever. For many years he had been at times the subject of great mental excitement, and even to some extent of mental delusions. There was no hereditary predisposition to insanity in his family, but two of his brothers were affected with paralysis of the right side, the paralysis being in one of them attended with considerable impairment of the speech. In the year 1865 he entered into the married state, and, four months afterwards, his habitually excited condition much increased, and it became necessary to place him in an asylum. He now soon began to hesitate in his speech, and to give evidence of the loss of the memory of words; his power of writing also became impaired. Some months later he was suddenly attacked with convulsions, followed by right hemiplegia, with total loss of speech, and he died in a few days. I was invited by his medical attendant to be present at the autopsy, when there was found evidence of chronic thickening of the arachnoid, with congestion of the pia mater of the left side especially; there was no clot, no degeneration of cerebral matter; the anterior convolutions were especially examined, and found

quite healthy. The most remarkable appearance that this examination disclosed, was a deposit of rough bony matter, exostosis, at the centre of the fossa, corresponding to the middle lobe of the brain on the left side, and to this rough surface the cerebral membranes were slightly adherent.

In the absence of any more decided cause, I presume the diseased condition of bone might account for the convulsions; but the case is curious from the fact of the hemiplegia being so decided without any disease of the central ganglia, or of the hemispheres. The *fons et origo mali* was undoubtedly the syphilitic taint. The occurrence of dextral paralysis, with dysphasia, in his brother, is just worthy of observation; in the account of Dr. Scoresby Jackson's remarkable case, it is stated that another member of the same family was affected with lesion of speech and paralysis of the right side.*

In reference to the subject under discussion, I wish more particularly to call attention to the fact that this and the two preceding cases may be considered as directly opposed to Professor Broca's theory; in all three the frontal convolutions were examined with a scrupulous care, and were found quite healthy, and in the case of Mr. N——, which was a marked instance of the amnesic form of aphasia, the lesion was not near the anterior lobe at all, being situated at the posterior part of the upper surface of the hemisphere. With every desire to avoid the common error of drawing definite conclusions from a limited number of observations, I would add that three negative cases, supported by *post-mortem* verification, go far to outweigh three hundred cases, apparently admitting of a different interpretation, but where no autopsy was made.

It is somewhat singular that in each of the above three cases, there existed an abnormal condition of the left side of the base of the skull. In one case, as above stated (Mr. C. G.). there was actual *disease* of bone; in the case of Mr. N—— there was an unusual development of that part of the petrous portion of the left temporal, which corresponds to the perpendicular semi-circular canal; and in Sutherland's case,

* Since the above was in type, Dr. Sumpter, of Cley, has recorded in the "Lancet," of October 3rd, a brief note of two cases of Aphasia now under his care, in which the patients stood in the relation to each other of mother and daughter.

there was a remarkable bony prominence in the left middle fossa, not existing on the other side. It will doubtless be said that unsymmetrical development of the two sides of the skull is not uncommon. I quite admit this, and I desire simply to record what I have observed, without attempting to draw any inference from such observation. I cannot but think, however, that it would be extremely desirable, in future autopsies of persons who during life exhibited symptoms of lesion of speech, that the condition of the bones of the skull should be minutely examined, and any unusual appearances accurately recorded.

Loss of Speech, with Paraplegia: Spinal symptoms.

George Green, a shoemaker, æt. 38, was admitted into the Norfolk and Norwich Hospital, on February 10th, 1866. Has had syphilis, but never suffered from any rheumatic affection. His first symptom was pain in the forehead and dimness of vision, for which he was treated as an out-patient at University College Hospital in the early part of 1864; up to this period he had been a most inveterate smoker, which habit he at once discontinued, at the request of Dr. Wilson Fox. During the summer of 1864, whilst at work, he suddenly lost the power of speech, there being at the same time an aggravation of the habitual frontal pain, but no symptom of paralysis, and he resumed his work next day. The total cessation of speech lasted about twenty minutes or half an hour, when the only symptom in connection with the power of speech was a slight hesitation and embarrassment, which lasted three or four days, and then as far as his speech was concerned, he was as well as ever. In about three weeks after the above symptoms, he was obliged to discontinue his work in consequence of being seized with a tingling feeling, running from the extremities of the right fingers, along the arm to the top of the shoulder, and up to the right angle of the mouth; there was evidently partial paralysis, as he could not hold anything, and there seems to have been anæsthesia, as he speaks of numbness and loss of feeling; the paralytic symptoms were entirely confined to the right upper extremity. These symptoms disappeared in about two hours, and he resumed his work, no treatment having been adopted. About January, 1865, he began to feel a tired sensation in his legs, as if he had been walking a long distance; at the same time he noticed some difficulty in passing his water, and an habitual constipation began to increase. Six months later he again lost his speech whilst reading, the loss of the power of utterance being preceded by a swimminess in the head and dimness of vision: he went to bed, fell asleep, and after

three hours woke with the speech restored, but only a little embarrassed; the next day all was right. He has never had dysphagia, and when the power of speaking has been suspended, the movements of the tongue have been unimpaired.

Symptoms on admission.—He is quite unable to stand or walk without assistance; there is no deviation of, or pain on pressure over the spine, except slightly at the neighbourhood of the lower dorsal vertebræ; there is no paralysis of the upper extremities, and the organs of special sense are unimpaired. The tongue is furred, the bowels are constipated, rarely acting more than once a week; there is difficulty in passing his water, but only at night when in the recumbent posture. There is no evidence of cardiac disease.

In the absence of any positive therapeutic indication, and with the possibility of his symptoms being due to a remote syphilitic cause, I prescribed small doses of perchloride of mercury, and a cathartic electuary at bedtime.

March 26.—For several days has not felt so well, has had but very little sleep; had an attack yesterday similar to his former ones, but much slighter in degree—the speech was affected for about two hours, but much less so than on former occasions. He attributes his relapse to want of sleep; he complains to-day of tingling and numbness in the left little finger, which has been present for four or five days

He derived some slight benefit from treatment, and left the hospital on the 12th of May. Thinking this a case in which it was very desirable to ascertain in what proportions the principal solid ingredients of the urine were present, I made a careful volumetric analysis of that secretion a few days before his discharge, with the following result:—

Chlorides	- - - -	7·5 parts per	1000
Urea	- - - - -	17 „	„
Phosphoric acid (in combination)		1·1 „	„

Quantity passed in 24 hours, four pints, sp. gr. 1014; reaction, alkaline.

Re-admitted December 1st. Omitting unimportant details, I pass on to January 19th, 1867, when I find the following entry:—He awoke in the middle of last night, and found that he had lost his speech, this phenomenon being preceded by violent pains in both brows, just above the external angular process. He feels the pain in his forehead to-day, but the speech is now all right.

22nd.—He has vomited some bilious matter, and had early this morning a tingling up the right arm up to the side of the mouth.

February 16th.—No marked difference in his symptoms since admission, except that there is now rather sharp pain caused by pressure over the 8th and 9th dorsal vertebræ, and from this spot downwards; for some weeks past also there has been pain at this region when not

touched. This patient soon afterwards left the hospital, and I heard nothing more of him, till his father came one day to say he had died quite suddenly. I regret I was not permitted to make a *post-mortem* examination.

The history of this patient is suggestive of the caution with which we should accept any statistics based upon cases only casually observed, or which have been under observation but a short time. Had this case been reported in its early stage, when there were abnormal symptoms present in the right upper extremity, it would perhaps have been recorded by some enthusiastic aphasiographer, as a case of aphasia with imperfect right hemiplegia, and it would thus have been cited with others to prove the correctness of Dax's theory; whereas, as time elapsed and other links were added to the morbid chain, paraplegia set in, and in fact there never was really any persistent paralysis of the upper extremities.

I do not wish to indulge in any hypothetical speculations as to the seat of this man's disorder. There was never any persistent symptom pointing directly to cerebral disease; whereas the persistent paraplegia and loss of function of the bladder and rectum, together latterly with tenderness and pain at the lower part of the spine, justified me in looking upon his symptoms as due to disease of an insidious nature in the spinal cord.

I have already mentioned, in a former part of this essay, a case reported by Dr. Maty, in which impairment of speech was one of the symptoms of spinal disease, and Abercrombie* has related three cases in which lesion of speech was accompanied by spinal symptoms; in the first of these there was found after death suppuration between the cord and its membranes, the brain being perfectly healthy; in the second case, no disease whatever was found either in the brain or spinal cord, or in the bones of the spine, although the symptoms during life were those ordinarily indicative of spinal disease; in the third case there was undefined suppuration of the cord.

Ataxic Aphasia occurring as a climacteric symptom.

Anna Maria Moore, æt. 47, a labourer's wife, of a strongly marked nervous temperament, came under my observation as an out-patient

* On Disease of the Brain and Spinal Cord, pp. 333. 356. 410.

of the hospital on Nov. 9th, 1867. She was the mother of ten children, had miscarried two years previously, had never enjoyed her usual health since, and menstruation from that time had always been irregular and too frequent. In February she had a severe sore throat, with ulceration of the tongue and of the mucous membrane of the cheek; and during this attack she lost the power of speaking for three days. Her speech continued all right till June, when the throat became similarly affected as in February, but to a less extent, and she again lost her speech. This time, however, the defect was not of a transitory character, as on the former occasion, for it continued up to the time of the admission into the out-patient department of the hospital.

On my asking her what ailed her, she could not make herself understood; she seemed, however, to understand perfectly what I said to her; and there was an attempt to talk, resulting in a nervous, unintelligible stutter. She seemed to have the proper use of her tongue, which was protruded straight; deglutition and phonation were unimpaired. At the expiration of a week, finding there was no return of the power of speech, she became an in-patient in the hospital.

Nov. 11th (two days after admission).—At my visit to-day, to my astonishment, she addressed me quite naturally. On making inquiries, I ascertained that when first admitted into the ward nobody could understand her. On getting up the next day she found she could speak better; the improvement continued during the day, and this morning she speaks as well as ever.

Nov. 23.—No return of her inability to speak having occurred, she was this day made out-patient.

1868. *July* 1.—Presented herself at the hospital to-day. The speech is impaired; she is, however, menstruating, and she says her speech is always more embarrassed at the period of menstruation.

June 29th.—Speech very bad to-day; can only express herself with the greatest difficulty. Menstruation, which should have begun some days since, has not yet occurred.

Feb. 12th.—Menstruation still deferred. For a period of three days, since her last visit, she could scarcely speak at all.

Without dwelling on the further details of this case, I would merely observe that the urinary secretion varied considerably in quantity, and she seldom passed a fortnight without what she called "a stoppage"—evidently an attack of painful micturition, with partial suppression. It seemed desirable to make a volumetric analysis of the urine, which gave the following result as to the principal solid ingredients:—

Chlorides	.. ..	7 parts per 1,000
Urea	.. ..	19 ,,
Phosphoric acid in combination		1·8 ,,

Quantity passed in 24 hours $3\frac{1}{4}$ pints, sp. gr. 1020, freely acid, no albumen. In reference to the treatment of this case, I found diffusive

stimulants of service, and she subsequently derived considerable benefit from the bromide of potassium.

On analysing this patient's symptoms, it is clear that the defect of the speech was ataxic, for no amount of prompting could assist her in the least; there was no amnesia. What was wanted was not the word, but the recollection of the process by which to give it utterance. I do not apprehend that the faculty of language was impaired in its intimate seat, for she was in no wise deprived of ideas necessary to serve as a pabulum for language, but there was suspension of the power of co-ordination necessary to the production of speech. I presume the embarrassment of speech was due to what M. Auguste Voisin* calls, "*l'interruption plus ou moins complète de l'incitation volontaire*," or, to use the words of Todd, "There did not exist that relation between the centre of volition and that of intellectual action which is necessary to give expression to the thoughts in suitable language; the centre of intellectual action had full power to frame the thoughts, but as the will was not prompted to a certain mode of sustained action, the organs of speech could not be properly brought into play."

The fact of the dysphasia being aggravated at the menstrual periods is worthy of notice. It first occurred after a menorrhagic flux, and the whole morbid chain of symptoms may be considered as climacteric. M. Delasiauve has cited the case of a lady who for three years, at each menstrual period, was affected with mutism and partial paraplegia, being at those times only able to make herself understood by signs.†

Another interesting feature in this case to which I would call attention, without, however, drawing any inference from it, is—that the lesion of speech first occurred after a severe attack of sore throat. I regret I have not been able to ascertain whether the throat affection was of a diphtheritic character, but the coincidence of the two symptoms is deserving of notice.

It may, perhaps, be said that cases like the above are common enough; possibly they are, but their study is not the

* This accomplished alienist physician, to whom I am much indebted for great personal courtesy during a recent visit to La Salpêtrière, is the author of an excellent article on Aphasia in "Le Nouveau Dictionnaire de Médecine et de Chirurgie Pratique."

† Journal de Médecine Mentale, 1865.

less interesting on that account; and here I would ask what was the ultimate cause of the symptoms observed in this patient? I have heard the term nervousness applied to such cases, but this word throws no light on their pathology. Nervousness, like hysteria, is a word frequently used as a cloak to our ignorance.

Is it not possible that the abnormal symptoms might be due to some form of uræmic poisoning? There were two circumstances rather favouring this view—viz., the partial retention of a fluid which had for years been periodically thrown off, and the frequent partial suppression of the urinary secretion. In reference to this latter hypothesis, it is true that the volumetric analysis of the urine (made at a time when the secretion was in its normal quantity) did not disclose a predominance of any particular ingredient; still, I cannot help thinking that in this and similar cases, where the symptoms are intermittent, they may be due to some element in the blood which has a deleterious effect upon the cerebral circulation.

It will be observed that there is no abolition of a faculty in such cases as the above, but simply an obstacle to the manifestation of such faculty. The faculty of language is present, but one of the processes is wanting by which it is brought into communication with the external world.

Left Hemiplegia with Aphasia; No disease of frontal convolutions; Extensive disease of right hemisphere; Vegetations on aortic and mitral valves; Fibrinous blocks in the Spleen.

William Lemon, a gasfitter, æt 40, was admitted into the Norfolk and Norwich Hospital on January 4, 1868, with the following antecedent history:—He had been ailing more or less since Midsummer, but had been able to continue his work till early in November. A fortnight later he was suddenly seized with left hemiplegia, and considerable embarrassment of speech, to such an extent that a stranger could not understand him at all. His power of speech gradually improved, and at the end of a fortnight he could speak nearly as well as usual.

Condition on admission.—There is complete motor paralysis of left leg and arm; anæsthesia only partial, if any. He has no pain or abnormal sensation in the head, and the organs of special sense are unimpaired, and there now remains but very slight embarrassment in his speech. Urine sp. gr. 1023, freely acid, slightly albuminous and

loaded with lithates. There is a well-marked double bruit heard nearly all over the anterior part of the chest, but at its maximum intensity at the apex, the diastolic murmur being the most marked. Pulse 84, quite steady and regular, but very hard, sharp, and almost dicrotic.

January 18th.—This patient continued much the same as on admission up to 6 p.m. yesterday, when the nurse, on taking him his tea, noticed he had lost the power of articulation, although he seemed to know all that was going on; a few minutes before the power of speech was lost he spoke a few words, implying that he saw imaginary beings around his bed. The power of articulation was never recovered, and he soon became comatose, and died early this morning.

Autopsy.—Heart: weight 19 oz.; right ventricle contained coloured and decolorised clots extending just beyond the pulmonary valves; right auriculo-ventricular orifice admitted four fingers and a thumb: tricuspid valves healthy; walls of left ventricle immensely hypertrophied; dilatation of left auriculo-ventricular orifice; the mitral and aortic valves were both covered with fibrinous vegetations, apparently recent; there was commencing atheroma to the extent of an inch and three quarters at the origin of the aorta. Liver: weight 4lbs. 2 oz., healthy. Kidneys: the right weighed $11\frac{1}{2}$ oz., the left 8 oz., both in a state of intense congestion. Spleen: very soft and friable, contained several fibrinous blocks. Brain: stripped of dura mater, it weighed 3lbs. $3\frac{1}{2}$ oz.; there was no abnormal vascularity or other morbid appearance, either on its convex surface or at the base. There was a general flattening of the superior surface of the right hemisphere, which was somewhat less developed than the left, and its convolutions were shrunk. The brain was carefully sliced, and no abnormal appearance disclosed until opening the lateral ventricles, when a yellow stain was seen on the upper portion of the right corpus striatum; on a level with this body, but behind, and external to it—at about the middle third of the hemisphere—was a softened portion of about the size and shape of a large walnut; there was also slight softening of the thalamus at its posterior part. On cutting into the corpus striatum it was seen that the posterior two-thirds had undergone the softening process, being of a yellowish hue, and waxy consistency. Antero-posterior slices were made in both anterior lobes, but no morbid change revealed; the frontal convolutions were examined with great care, and the right and left convolutions compared, but they seemed perfectly healthy; but as the softening of the right hemisphere approached so near the surface of the right side—certainly within half an inch of Broca's region—it is quite possible that some slight alteration of the posterior part of the frontal convolutions may have existed, not patent to our means of investigation. The vertebral and basilar arteries were healthy, as also the termination of the carotids. There was no obstruction of the middle cerebral arteries, but that on the right side, when traced along the fissure of Sylvius, presented at the point of

its first bifurcation a milky appearance, to the extent of about a quarter of an inch in length. The olivary bodies were specially examined, and were quite healthy, as were also the medulla oblongata, cerebellum, pons, and crura cerebri.

Microscopic Examination.—A separate examination was made of the corpus striatum, and also of the softened hemisphere. In the corpus striatum there was no proper brain structure; an absence of vessels and nerve fibres; an abundance of granular matter. In the portion taken from the hemisphere there was an absence of nerve fibres, and the vessels were coloured with fawnish pigment; there was an abundance of granular matter, with here and there a fat globule.

The above case is extremely interesting from several points of view. In the first place, I would observe that the cardiac disease was doubtless the primary cause of the softening of the cerebral tissue; and it is extremely probable that some vegetations, similar to those observed on the aortic and mitral valves, had become detached, and thus had been carried into one or more of the cerebral vessels, although no positive evidence of obstruction existed after death.

The condition of the spleen is confirmatory of this view, as the fibrinous blocks found in that organ undoubtedly betokened an obstruction to the splenic circulation similar to that which had probably produced the cerebral symptoms. It would seem that these fibrinous deposits in the spleen have been frequently observed in the autopsies of aphasic patients. In four of Dr. Wm. Ogle's cases this condition of spleen was observed; and in each case, as in that of Lemon, there was also disease of the heart.

It will be observed that the lesion of speech was associated with paralysis of the *left* side. This coincidence of aphasia with left hemiplegia is, I believe, much more common than is generally supposed. I have at the present time an instance of it under my care at the Norwich Hospital, and I have already, in the preceding pages, mentioned cases where this combination of symptoms was observed. Dr. Crichton Browne has informed me that he has collected six cases of left hemiplegia with aphasia, which I trust he may be induced to place on record.

If the above observation is in direct antagonism to M. Dax's theory of the localisation of speech in the left hemisphere, it is *a fortiori* opposed to that of Professor Broca; for although the softening was suspiciously near the third frontal convolution of the *right* side, the *left* frontal convolutions, as indeed

the entire left hemisphere, presented no trace of disease whatever.

I could mention several other most interesting cases which have lately fallen under my own observation, where loss or lesion of the faculty of articulate language was a prominent symptom, but this essay has already far exceeded its original limits, and I trust that the observations I have recorded may have been sufficiently varied to illustrate the clinical history of aphasia. I shall, therefore now proceed to the consideration of certain abstract points suggested by an analytical study of the cases mentioned in the preceding pages, and for the accomplishment of this task I shall have to avail myself of the assistance of the sister sciences—Physiology and Comparative Anatomy.